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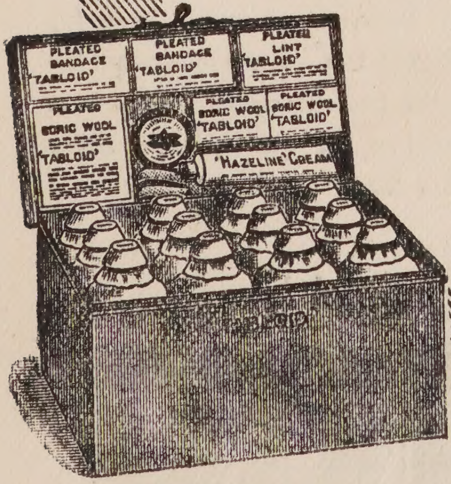
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Some Factors Influencing Health in Tropical and Sub-Tropical Countries

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"Notes on nearly 100 Cases of Uterine Fibroids successfully treated by the
Continuous Current"; &c., &c.

London
JOHN BALE, SONS & DANIELSSON, Ltd.
OXFORD HOUSE
83-91, Great Titchfield Street, Oxford Street, W.

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H.B.M. AGENT AND CONSUL-GENERAL
IN EGYPT.

"Labour, food, drink, sleep, all in moderation."

—*Hippocrates.*

PREFACE.

THE contents of this little book have already appeared as a series of articles, but at the request of some friends interested in Tropical Hygiene I have been induced to publish them in the present form. I hope they may prove of some use to those who are fated to live under a tropical or semi-tropical sun.

T. G. G.

Cairo,
August, 1911.

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Some Factors Influencing Health in Tropical and Sub-Tropical Countries.

CHAPTER I.

GENERAL CONSIDERATIONS WITH REFERENCE TO BACILLI AND ANIMAL PARASITES—THE MAN SUITABLE, OR OTHERWISE, FOR RESIDENCE IN WARM LATITUDES—THE WOMAN SUITABLE, OR OTHERWISE, FOR RESIDENCE IN HOT COUNTRIES.

THE questions are often asked, What special attributes should a man or woman possess who intends visiting a tropical or sub-tropical country and residing there for any considerable length of time? And, during their sojourn in such latitudes, what precautions should be adopted to ensure maintenance in good health? As an answer to these questions is of great importance to many, Europeans as well as Americans, it may be of practical utility to consider briefly some factors which influence or modify health in what are known as the warm regions of the earth.

Disease, or indifferent health, can, generally speaking, be ascribed to the continuous heat, the great and remarkable diurnal variations of the temperature, to depressing influences of the environment, or to parasitic invasion.

There are, in addition, special factors, largely if not entirely avoidable, which exercise a profound and injurious influence on health. These will be considered separately.

It is now generally acknowledged that most of the diseases endemic in tropical latitudes are of parasitic origin. The existing natural conditions are peculiarly favourable to the growth and multiplication of micro-organisms. The lowest forms would appear to exist at the expense of the higher, and, as the distribution is very general, a continuous warfare is going on, but without any appreciable result, so far at least as numbers are concerned.

It is asserted that micro-organisms, largely pathogenic, abound everywhere, and if such is really the case, and unless some modifying conditions co-exist, and of the nature of which we are in ignorance, it is scarcely conceivable that human life, by which is meant the white race, could survive for any great length of time, or at least that a normal standard of health could be maintained under such circumstances. However, there can be no reasonable doubt about the fairly general distribution of destructive organisms. They are to be found in water, milk, butter, and in certain species of vegetables and fruit ; in certain kinds of meat, fish (fresh-water and shell), and, above all, in nearly every variety of native drinks. In addition, they are to be found in the interior of several species of insects, a fact now recognized as of great practical importance in the propagation of disease. The insects act as intermediary hosts, and during their residence there the bacilli undergo multiplication and development until the time arrives when they are sufficiently matured to infect the human animal and originate a variety of diseases, such as malaria, yellow fever, relapsing fever, sandfly fever, dengue, trypanosomiasis (sleeping sickness), conjunctival diseases, various kinds of skin affections, staphylococci infection, diarrhœa, dysentery, enteric, and possibly many other morbid conditions.

The native population in many countries do not, comparatively speaking, suffer to any great extent from certain diseases very common in European countries, and generally understood to be due to specific micro-organisms. This comparative immunity from such well-known diseases as typhoid fever, paratyphoid (so-called), bovine tuberculosis and the many intestinal affections usually ascribed to the ubiquitous *Bacillus coli communis*, such as appendicitis, is certainly a very remarkable fact, and is usually accounted for by centuries of immunization. The nature of the food and drink on which they exist is such that it would be quite impossible to expect an average European to live under similar conditions for any length of time. Painful illustrations of this fact are by no means infrequent, when Europeans or Americans, while visiting native quarters, are induced to partake of some native drink or other luxury, the sequence being the development of a virulent and frequently fatal form of fever or septic mischief of some kind.

The native races, however, although they may enjoy immunity from certain specific diseases common among white races, have their own special troubles. These are due to the presence of animal parasites, and so general is their distribution that it has been computed that 95 per cent. of the population of some countries are affected by them.

Many well-known diseases are now recognized as due entirely to the agency of certain parasites, and it is further recognized that some of these maladies—although very fatal after a certain stage of development has been reached—are readily amenable to treatment if a diagnosis is early established, and appropriate and energetic treatment is immediately carried out.

The importance of these facts on the future development of the economic conditions of certain countries is beginning to attract some attention, especially as it has been suggested that the progressive anæmic condition known as ankylostomiasis, and the painful urinary affection known as bilharzia, will increase as irrigation increases. If this proves to be correct, and in all probability it will, the industrial efficiency of this country at least may be seriously threatened, unless measures are taken to protect the fellaheen, the most industrious class in Egypt, from any further increase in the incidence of these serious diseases amongst them.

The intestinal canal in the native is the most favoured locality for the residence of animal parasites, and as the same region is the natural habitat of specific germs of disease in the white race, it is quite possible that the immunity of the former—at least so far as the lower digestive tract is concerned—from the diseases of civilized life may be due to the destructive effects of the animal parasites on the lower forms of micro-organisms. To judge from their variety, size and number, as well as their voracious habits, it is not difficult to understand how the principle involved in connection with Metchnikoff's sour milk bacilli may be put into active operation, but of course much more efficiently and effectually.

However, whatever the value of this suggestion may be, it is worth remembering that the same immunity from specific diseases—such, for instance, as diphtheria—does not exist in the upper digestive or respiratory tract.

It may be comforting to emphasize that the entrance into the body of micro-organisms is not *always* productive of pathological processes. We know that many varieties are to be found under conditions perfectly consistent with robust health, a fact which makes many physicians sceptical about their true rôle in the ætiology of diseases. However, that is a deep question, and what we are concerned with now is the undoubted fact that many species of microbes only really become pathogenic, or, in other words, capable of fanning the flames of disease and keeping them burning, when the human host is receptive, when it loses its inherent power of resistance from any cause to the invading army of bacilli.

We are thus in the face of two causes of disease: extrinsic, which may be purely accidental, or under certain conditions of no material importance, and intrinsic, which may be also accidental, but which is of primary importance, inasmuch as many bacilli cannot induce morbid processes, even although present in large numbers, so long as the inherent intrinsic resistance is well maintained, so long, to use the plainest language, as the ordinary functions of the body are being performed in a normal and regular manner. This brings us to the important question: What class of individuals should undertake duties in tropical or semi-tropical countries in order that they may be able to perform their duties satisfactorily to themselves, to their employer, and with credit to the State?

It will be understood that they are exposed to many risks, which do not exist in temperate countries, but so long as a normal standard of health is maintained and ordinary hygienic rules observed, such incidental risks may be largely discounted.

Let us now firstly consider some of the indications and contra-indications to life in tropical and sub-tropical countries.

The Type of Man Suitable, or otherwise, for Service in such Regions.

A suitable man should have his gums in a healthy condition, with not the least suspicion of Rigg's disease, and with his mouth full, or at all events containing, a large proportion of sound teeth. There must be no defect of hearing, and any chronic morbid condition of the ears should be looked on as a fatal objection, as it is well known that under such circumstances quinine is badly tolerated, and there must be no question about the administration of that drug in large and increasing doses. Indeed, in Germany it is the rule to give quinine in gramme doses to officials about to proceed to her colonies, to see if they are amenable to that medicine or otherwise, and anyone with experience of tropical disease will agree that the precaution is a judicious one.

The digestive organs, such as the stomach, liver and intestines, must be in a healthy condition; a tendency to constipation rather than to looseness is an advantage. A clean, healthy skin, free from all diseases, is of the greatest importance, and this will be readily understood when the local conditions are considered.

Apart from the risk of parasitic invasion, a great danger to Europeans arises from the sudden and extreme variations in temperature. This necessarily throws a severe strain on the internal organs, inducing temporary congestion, and such a condition is liable to become aggravated, indeed pathological, should the skin, from any cause, fail in carrying out its normal functions.

Great importance must therefore be attached to the condition of the skin and its maintenance in a clean, healthy state, and for this reason individuals who are the victims of eczema, psoriasis, herpes, acne (certain forms), boils, to mention only a few of the diseases, would be acting wisely in seeking employment in temperate regions.

Of course it must be distinctly understood that these remarks only apply to subjects who contemplate long residence in hot countries, as it is well known that a stay for a short period during the winter months in some countries is productive of much good in many cutaneous affections.

It goes without saying that the heart muscle must be normal, valvular diseases, or intermittent or irregular action from whatever cause, are to be looked on as positive contra-indications. Those predisposed to tuberculosis are absolutely debarred, and the same applies to sufferers from diabetes, albuminuria (even when physiological), chronic headaches, or diseased condition of the blood-vessels, such as varicose veins.

As a rule thin people do best, and any undue tendency to the deposition of fat should be viewed with suspicion.

But, assuming that the various organs of the body are found to be normal, are we justified in concluding that the individual will prove suitable for life in the Tropics and a valuable asset to his employer and the State?

It would be unjustifiable to do so without taking into consideration also the very important factor known as the temperament, under which is included certain constitutional tendencies, peculiarities and idiosyncrasies.

It must not be lost sight of that little oddities or morbid tendencies are liable to become, in the course of time, accentuated, and for this reason alone any predisposition to functional nervous disturbances, such as pronounced irritability and moroseness, must be looked on as an absolute contra-indication to residence in hot countries. I do not think sufficient importance is attached to the question of temperament when choosing men to perform duties under a tropical sun. It will invariably be found that the man who has his temper well under control will stand the climate much better than the man who allows himself to be upset by every trifle (and he may have many causes, great and small, during the day to upset his normal equilibrium), although the latter may be the possessor of vastly superior physical advantages. But there may be a deeper question involved than even personal health, inasmuch as the irritable individual injures not alone his own health, but affects injuriously also the interests of his employer, and by his impatience, contempt, and over-masterful action (with which we are not altogether unfamiliar) towards "the native," the much higher interests of the State as well.

Under ordinary circumstances the nervous system becomes profoundly modified, which manifests itself by increasing impatience and irritability.

A climatic combination of circumstances, especially as we are now beginning to understand the direct chemical rays of the sun, are responsible for these effects, but they are not all, and a good deal of the irritability and restlessness must be ascribed to the monotony of existence, the solitude, as well as to dissatisfaction with the environment and racial surroundings.

It is under such abnormal conditions that the great value of an equable and stable temperament becomes self-evident, for the possessor, without being over intellectual, can regulate his energy with prudence, his activity without restlessness, and his inflexibility and the rigid performance of duties without impatience or ill-humour.

Bacon has said that the right man possesses fortitude and constancy of mind. "He enjoyeth good without disdain, and endures bad without impatience."

The Type of Woman Suitable, or otherwise, for Residence in Tropical Countries.

Now let us consider briefly the type of woman suitable or otherwise for residence in the same regions. There will be general agreement with Chaucer's expression of opinion in asking—"What is better than Wisdom? Woman. And what is better than a good woman? Nothing." But no one will be more disposed to agree with the underlying truth contained in these answers than the man who through various circumstances is obliged to ask his natural helpmate to share with him the disappointments and inconveniences inseparable from life in tropical and semi-tropical countries.

As a rule, it may be said that a European woman is not fit, either physiologically or by temperament, for residence in the torrid zone, but there are countries where, although excessive temperature may prevail, a physiological existence for woman is possible, granted that due attention is paid, in the first instance, to a fixed standard of health.

What has been said already in reference to man applies with even greater force to woman. The various organs of the body must be normal and healthy. Any tendency to anæmia especially must be considered as a positive contra-indication to life in hot countries. The continuous high temperature and extreme monotony of existence produce anorexia, which in time leads to asthenia and gradual deterioration in the condition of the blood. To avoid this is not always an easy matter. It is far more difficult in the case of woman than of man. She is of necessity more confined to the house, has more leisure to think about the development or possible development of ailments, and, above all, she is prevented from taking, for one reason or another, sufficient out-of-door exercise, the best and most reliable preventive of disease, real or imaginary.

In giving an opinion about the suitability or otherwise of a woman who is about to proceed to tropical regions, it is evident that such an opinion must be based on deductions formed after the most minute inquiry and investigation into her physical and mental condition. It must never be forgotten that in addition to the climatic conditions, which naturally, through constitutional reasons, act more perniciously on the female, she has many household worries to contend with, as well as, if she is properly constituted, the worries and disappointments of her husband. The right sort of woman, as many men know, is an asset of great value in tropical countries, for she not only takes the greatest interest in the domestic arrangements, paying particular attention to the nature and quality of the food, as well as the observance of the most scrupulous cleanliness throughout the household, especially to everything in connection with the kitchen, but also, through her natural shrewdness and as a rule superior intelligence, she is fitted to give advantageous advice on many delicate points connected with her husband's duties.

In short, the right sort of woman is in possession of good health, and she avoids, in every essential, the abuse of the hygienic laws. She is by temperament cheerful and optimistic, by nature domesticated, and so constituted, mentally and morally, that what one might call the tropical mania for scandal, or the utterance of unkind, uncharitable, and ungenerous words towards others, especially those of her own sex, is both rigorously discouraged and condemned. Of course, the fulfilment of these conditions indicates a healthy mind in a healthy body, and when such a fortunate combination exists, even in isolated instances, the results are far-reaching and beneficial in their effects.

But it may be asked how many fulfil these conditions? The cynic or confirmed Benedict says very few or scarcely any, and this wholesale condemnation is generally due to familiarity with the attributes of the unfitted, or to the undue recognition which is always meted out to the unworthy at the expense of the worthy.

However, no one would attempt to deny that many women fated to live among semi-civilized people are, by reason of temperament alone, absolutely unsuitable.

The capricious and irritable woman who is a frequent sufferer from backaches and headaches should remain on her native soil. The aches and pains may in time possibly be ameliorated, a good deal depends on the cause and the district, but the capriciousness, the mental irritability and instability, will without any doubt become aggravated until in time even the phlegmatic native rebels against the petty tyrannies of the household. The position of a man so unfortunately situated admits of no two opinions. If he is to retain his own health and perform his duties to the satisfaction of his employer or the State, the domestic arrangements must be altered, and hard as it may appear, and undoubtedly is, there is no other alternative but for his natural helpmate to return to her native country, where alone there is a prospect of her regaining average health and mental stability.

The modern education of women in most countries is radically wrong. They can readily discourse on the latest fashion in dress, as well as the latest models of that abomination the corset, which is supposed to improve the figure, but at the expense of wilful interference with the physiological functions of most important organs.

The modern woman understands games in all their perplexities and can often reduce them to scientific problems easy of solution, but how many can give instructions about such commonplace and vulgar trifles as the cooking of a potato, or beefsteak, or a rice pudding, not to mention the possible necessity of intelligent superintendence in the scientific rearing of an infant?

The woman who is not capable of intelligently ordering a good dinner, or who does not know whether it is scientifically cooked or otherwise, is absolutely unfitted for life in the tropics. Good and reliable cooks are only rarely to be found, and for that reason intelligent supervision over the culinary arrangements is a *sine qua non*, if many ills are to be avoided; and in addition it is very essential that periodical as well as unexpected visits should be made to that department of the household.

It may be asserted as an axiom that a dirty kitchen denotes a slovenly, careless, and incompetent mistress; and although uncleanliness in connection with the domestic arrangements is at all times very reprehensible, its significance is vastly intensified in tropical countries, as it means accumulation of a varied assortment of insects, living storehouses and carriers of disease, very frequently of a virulent type. Now the last type of woman, who is also to be considered as unsuitable, is what is generally known as the frivolous woman, who cares much more for motors than babies. As a rule she is physically normal, but mentally there is a certain amount of instability, which, through some occult or climatic reason, appears to become greatly accentuated.

Many reasons have been brought forward to explain the aggravation of erratic or morbid tendencies, but while these are chiefly of interest to the psychologist, there is no doubt that the actions of a few women of this class, who are invariably to be found among visitors, exercise a very pernicious influence among native races, and are responsible for the complete change which appears to have taken place in their attitude and behaviour towards civilized women in general. The native may be dull and unimaginative, notwithstanding his political aspirations, but he has profound latent respect for those who respect themselves.

There was a time, I believe, not many years ago, when it was unknown for a European woman to be subject to insult or indignity in any city or town on this continent.

Can the same be said at the present time? Unfortunately it cannot, and unless strenuous individual efforts are made to mitigate the evil, the consequences will affect injuriously not only the position of the white race, but the interests of civilization as well.

CHAPTER II.

FOOD—FUEL VALUE OF FOODS—WATER AND MINERAL WATERS—ALCOHOL.

It is generally believed by individuals with even limited experience of sub-tropical or tropical countries that the morbidity of disease is greater (among residents) than in temperate regions, and that in consequence the mortality is also relatively high in proportion.

The individual experiences of everyone will agree that the statistics of mortality are alarmingly high. If we only look back for a period of four or five years it is remarkable the number of young and apparently healthy persons, amongst our friends, who have succumbed to disease during that short period, and not the least remarkable factor in connection with such occurrences is the extreme suddenness with which death supervenes.

Now the gravity of such a state of affairs must be admitted by even the most thought-less, and the questions arise, Are such fatal diseases preventable? Or can the statistics of mortality be improved by greater attention to personal hygiene and the laws of health?

The abnormal death-rate must be due to one of two causes: either a more virulent type of acute disease prevails, or the inindividual's inherent power of resistance is so diminished that favourable soil exists for the growth and multiplication of pathogenic micro-organisms. That disease may be more virulent in hot countries is quite possible, but I do not believe that the high death-rate can be due to that cause, or, indeed, that many common affections are more malignant in their operations than when found to exist in temperate regions.

Typhoid fever, pneumonia, pleurisy, appendicitis (to mention the most common) are generally accepted as more fatal in hot countries; and so they are, but the high mortality is not due to the diseases *per se*, but to the diminished powers of resistance caused by a combination of circumstances, some of which are altogether avoidable.

Typhoid fever, we know, is not a particularly fatal disease among natives. As children they are frequently affected, which accounts for the comparative mildness of the disease when it attacks older people. Again, pulmonary tuberculosis, although very prevalent and very fatal among certain native races, does not claim an excessive mortality in comparison with certain European countries.

The virulence of the germs of some diseases has become attenuated and that of others increased, and we can understand that tuberculosis would have depopulated Europe if it had prevailed in the Middle Ages with the same virulence as it does to-day, and yet the same neglect of personal cleanliness, unhealthiness of houses, narrowness and uncleanliness of streets, promiscuity and neglect of latrines, is to be found to-day in almost every large city in hot countries.

In all probability then, the high mortality from disease in tropical climates is due to what may be called intrinsic causes, to a diminution in the intrinsic powers of resistance —undermining of the constitution it used to be called—and this disturbance of the vital powers is brought about by a variety of circumstances, apart altogether from climatic influence.

Now what are these other dominating factors? They are: (1) Grave errors in diet, which includes eating and drinking. (2) Mistaken views with regard to exercise and clothing. (3) Unjustifiable confidence in certain prophylactic procedures to the neglect of ordinary precautions against disease. As the issues involved are of national as well as humanitarian interest, it may be useful to consider these factors more in detail.

(1) As an instance of the very loose views sometimes held about diet in relation to the Tropics, it is stated in perhaps the very best work on dietetics that "the influence of climate, and especially of warm climate, on the amount of food required is commonly exaggerated. It seems natural to suppose that, if the surrounding temperature is high, the amount of heat required to be produced in the body will be less. But this is to lose sight of the fact that the temperature of the body is chiefly

regulated by physical and not by chemical means. To put it more plainly, we adjust the temperature of our bodies to that of the surrounding medium, not so much by the expensive method of increasing or diminishing the amount of heat we produce as by the simpler expedient of regulating the amount of heat lost." And the same authority volunteers the statement that the amount of food consumed by the inhabitants of the Tropics is not notably less than the consumption by those who live in the temperate zone.

Now it seems scarcely necessary to point out that such statements are entirely at variance with facts and ordinary experience, and it is quite evident that the writer has had no personal experience of the conditions as they exist under a tropical or sub-tropical sun. Heat (energy) and life are inseparable, and it is impossible to avoid the production of a certain amount of heat if life is to be maintained, or if the physiological activity of our cells is to be kept up. The heat of the body can, of course, be regulated to a great extent by wearing thinner and more suitable clothing, but the influence exercised in this direction cannot be very appreciable, when the surrounding temperature is higher, as it very frequently is, in tropical countries than the body temperature. At a temperature of 90° F. there is usually far more heat produced in the body than is necessary for its requirements, so that even at this point there is a certain loss. At a much higher temperature the amount of heat required is proportionately less, and to live a comfortable and physiological existence it is not only necessary to increase the loss of heat from the body by wearing suitable clothing, but, what is of far more importance, *the production of heat must be regulated by the consumption of proper food.*

It is a truism that many persons are constantly engaged in digging their grave with their teeth, and the truth contained in this has a more extended application when applied to warm latitudes. Here it appears to be taken for granted that food in quantity can be partaken of with the same impunity as in cooler regions, notwithstanding frequent evidence of the disastrous results following such a course. If the cells of the body are not to be over-stimulated—and over-stimulation or excitation leads to pathological processes—not only must food be taken in small quantity, but the quality or nature of the food must be completely altered in accordance with chemical and physiologcal laws, or if they are not sufficiently understood, in accordance with the laws of reason and common sense.

The different kinds of food are usually divided into three classes: (1) Proteids—meat, fish, poultry, cheese, &c.; (2) carbohydrates—potatoes, bread, rice, peas, beans, &c.; (3) fats—butter, bacon, cream, eggs, &c. The first are tissue builders and repairers, and are sometimes known as "quick fuels." The second are the main sources of muscular energy and supply as well as a moderate amount of heat. The third are the main producers of heat in the body.

Now it may be of practical utility to give the fuel values of some foods ordinarily in use. The standard usually employed is known as the calorie, and represents the amount of heat required to raise 1 litre of water 1° C.

The following is the number of calories yielded by the complete combustion of 1 grm. of the various foods according to Hutchinson: Bacon 8·86, butter 8·60, fat goose 4·95, fat pork 4·12, fat mutton 4·03, rice 3·51, peas 3·31, fat beef 3·27, maize 3·7, coarse white bread 3·03, wholemeal bread 2·78, fine white bread 2·74, cheese 2·4, eggs 1·59, lean beef 0·98, apples 0·54, spinach 0·34, oranges 0·33, strawberries 0·32, lettuce 0·20.

And again, according to the same authority, the following shows the fuel value of 1 lb. of some typical foods:—

Food	Calories as proteid	Calories as fat	Calories as carbohydrates	Total fuel value per lb.
Butter	18	3·559	None	3·577
Peas	418·8	71·7	982·5	1·474
Cheese	553	750	None	1·303
Bread	130	21·5	976·5	1·128
Eggs	232	507	None	739
Beef	391	232	,,	623
Potatoes	18·5	9·3	341·2	369
Milk	67	168	87	322
Fish (cold)	299	16	None	315
Apples	9	None	229	238

It can thus be seen that the heat-producing qualities of different foods vary widely, and if a comfortable and healthy existence is to be led, only food of low caloric power is to be used—hence fats and food containing much fat must be taken only very sparingly; while the quick fuels, by which is meant food, especially proteids, which produce a large amount of heat in a short time, should be reserved for the principal meal, when the sun no longer shines and the day's work is finished.

If the two tables above are carefully studied, the foods which should be avoided, as well as those which enter largely into the dietary, can readily be seen; in this way it will be easy also to construct a dietetic regimen on sound physiological principles. But there are other factors also which must be taken into consideration. It is generally held by dietetic specialists that 40 oz. of food is the amount which an average man doing a moderate amount of hard, muscular work requires during the twenty-four hours in temperate regions. The amount is distributed as follows: Proteids (meat, &c.) 11 oz., carbohydrates (potatoes, vegetables, &c.) 22 oz., fats 3 oz. This does not include such articles as milk, salt, sugar,

&c., used in ordinary cooking. Now if these represent the amount of food required in a cold country, it stands to reason that the proportions must be considerably altered to meet the entirely different conditions existing under a tropical sun; and instead of adhering to the same regimen, as so many foolishly do, the proportions should be 9, 26 and 1 respectively. Of course, when attempting to establish relative food proportions between temperate and tropical countries, a very possible source of error must not be lost sight of, and that is, the less nutritive value of meat, &c., in the latter regions.

But how many confine themselves to a rational, common-sense dietary and consume only 40 oz. of food daily? Very few. This can all the more readily be understood if we analyze, say, an ordinary lunch. Fish and beef will account for fully 10 oz. Potatoes, bread, vegetables, butter, 9 oz. Pudding 4 oz. Ale, &c., 1½ oz. Probably 1 oz. of cheese will be added, and as this contains twice as much proteid as beef, another 2 oz. is added. Here, then, is an instance of an ordinary individual consuming more proteid in one meal than is needed in the twenty-four hours in the Tropics—about half the energy-producing foods and more than half the requisite amount of fat—so that such a person, when you take into consideration his heavy breakfast, afternoon tea, or possibly something stronger, had he any particular desire to live as a rational animal, should abstain from dinner altogether. Of course the natural result of this over indulgence in food is the accumulation of poisonous food debris, unusual and unnatural strain on the internal excretory organs and the development sooner or later of pronounced pathological processes.

The question of food in relation to the Tropics has quite recently attracted a great deal of attention, and Dr. Balfour, of Khartoum, has given an admirable summary of authoritative statements in this direction.

It is there pointed out by Simpson that the defect likely to be in the diet of a European in the Tropics is that it is too nitrogenous and fatty. This is due to the tendency to continue a diet suitable for a temperate climate. The result is that too much meat is taken, which places a strain on the excretory organs and causes disorder of the digestive functions. The condition which ensues predisposes to sunstroke. Animal food should be diminished, and a more liberal allowance of vegetable food taken. The latter supplies the necessary constituents in a less stimulating form, and one more suited to a climate where congestion of the abdominal viscera is specially apt to occur. There is not the same necessity for fatty foods as in colder climates, and the substitution of fruits and farinaceous substances for oleaginous articles will not only be more gratifying to the taste, but will prevent intestinal disorders which under the circumstances are likely to be produced by a diet which is too fatty. It would be a mistake, however, to exclude meat altogether from the diet; and in the case of special hard work outdoors meat may be increased in the diet with advantage. Carbohydrates furnish energy with a moderate production of internal heat; hence they are very valuable in the Tropics, especially indigenous cereals, such as maize, rice, and the native lentils, as they contain less nitrogen. Sugar is excellent when energy is to be liberated rapidly with the least tax on the digestive system, and Simpson mentions the case of the debilitated cavalry horses in the Philippines which recovered health and energy when their coarse grass or hay was sprinkled with molasses or sweetened water.

Wiley mentions the value of a fruit diet, and draws attention to the fact that the prevailing characteristics of the natural food of the Tropics are found in the excessive quantity of sugar which they contain, or, as in the case of cassava, of starch. The amount of proteid is very small, and the amount of oil is, with the exception of the cocoanut, not marked. On the whole it appears that the natural tropical food is one composed of a large excess of carbohydrates in which sugar predominates.

I may state here there are several special foods in the market answering to these requirements, but many suffer from the initial disadvantage of difficulty in the preparation, or in requiring milk as an adjunct, and this cannot always be procured in a reliable condition.

Horlick's well known malted milk answers to every requirement, and no household in warm countries should be without this valuable food. It keeps indefinitely in any latitude, is easily prepared, and, owing to the large quantity of soluble carbohydrates which it contains, over 67 per cent., it produces a large amount of muscular energy.

Cantlie points out that beef is often difficult to obtain, and is often tough and unsavoury. He adds that most Europeans eat more meat (when they can get it) in the Tropics than at home. Some say that this is because the climate is exhausting and more strengthening food is required, but the real reason no doubt is that the nutritive value of the beef and mutton is inferior, and more has to be taken to supply the bodily wants—thereby taxing the digestive organs, which in hot countries are usually feeble, and bringing a train of gastric, hepatic, and intestinal troubles. As regards fowls, the nutritive value is relatively small, and chicken is frequently difficult to digest. Moreover, the monotony of eating fowl day after day, and month after month, let the fowl be cooked in ever so many ways, palls upon the appetite after a time, and digestion and nutrition suffer. The same remarks apply to pigeons, which form such a staple dish in Egypt and the Soudan. "Curry," says Cantlie, "if properly made, is a hygienic dish; and the condiments should be added by the consumer himself or herself at the table and not by the cook." The word "curry" really means sauce, and the therapeutic use of pepper seems to be not so much as a stomachic tonic as an intestinal stimulant, and chiefly as a stimulant to the large intestine. It is the large intestine that first flags in its duty in the case of natives of tropical countries, who are very subject to constipation, owing to the atonic condition of the colon, a state of things often remedied by black pepper.

As regards the hours for meals, it will be found much the best to be content with a light breakfast before going out in the morning. This should consist of tea, coffee or cocoa, bread and butter; one egg may be added and fruit in season. The next meal should not be later than 12 o'clock, and should consist of one kind of meat, rice, cheese, vegetables and fruit. Afternoon tea at the usual hour, and between 6 and 7 a glass of good whisky will prove acceptable and beneficial.

The dinner should be more substantial than the lunch, but fruit and vegetables had better be avoided at the evening meal.

So far solid food has only been considered from the chemical and physiological standpoint, and now the question arises, does solid food play any important part in the propagation of disease?

It is well known that shell-fish, grown or laid in sewage-polluted water, and that vegetables and strawberries, however eaten, in the uncooked condition and grown in sewage-polluted soil or water, are potentially dangerous. It has been ascertained that oysters in contaminated areas contain germs of disease when the water by which they are surrounded may prove practically sterile, and as vegetables and strawberries assimilate the germs and ova of parasites from the soil, it cannot be too strongly emphasized that shell-fish, and indeed all kinds of freshwater fish in most tropical countries, as well as vegetables, such as watercress, salads and lettuce, and also fruit, such as melons and strawberries, must be scrupulously avoided, unless the source from which they spring is known to be free from all risk of contamination, and every care is taken in their preparation in boiled and filtered water by a thoroughly reliable person. Pork is to be avoided also under all circumstances, and beef must be carefully selected and thoroughly boiled, and should any small bladder-like substance be seen it should be discarded. As already pointed out, freshwater fish had better be avoided, but if it must be eaten care is to be taken that it is at least fresh, and this is indicated, notably among other ways by the pink condition of the gills. It will not be sufficient, however, to satisfy oneself as to the nature and quality of the food when it arrives from the market, and to prevent risk of contamination by dust, flies, ants, or other insects, periodical visits must be made to the kitchen. It can be easily understood how readily food becomes infected by these pests in tropical countries. They exist, it is scarcely necessary to say, in myriads, and it is really astonishing how rarely one finds even ordinary common-sense precautions employed to prevent gross contamination of food by them.

We have no direct means of ascertaining to what extent ill-health or disease are caused by such agencies, but what we do know is that many serious and lethal diseases are propagated in this way, diseases which could be avoided by the adoption of very simple prophylactic measures.

Liquid food stands in a different category from solid in relation to the spread of disease or the causation of disease.

We know that multiplication of bacteria does take place in milk, which of course considerably increases the dangers of widespread infection, but milk when secreted by a healthy animal is practically free from all germs and it only becomes infected afterwards by some living carrier or through the medium of dirty utensils.

Possibly this statement may be at variance with the teaching of some bacteriologists who are able to find germs of disease everywhere, but it would be as well, perhaps, to remember the advice of an eminent Frenchman to his pupils, viz., to be very careful or they would find what they were looking for.

The intermediary host in the case of milk is very frequently an ignorant, careless human being who does not understand what cleanliness means, and this fact, in conjunction with obvious contamination through dust and insects, points to the necessity of boiling milk before use, under all circumstances, in tropical countries. This must be looked on as an essential prophylactic measure.

Mention of "Lemco" may be made here, and the beneficial influence which it exercises on the digestive processes. Taken iced in the morning before commencing the work of the day, it will be found a pleasant beverage as well as a tonic to the system.

Water and Mineral Waters.

It now remains to consider water and alcohol. Water, it is scarcely necessary to say, is generally supposed to play a highly dangerous part in propagating illness, although it is quite possible, as recent investigation tends to show, that this part may have been exaggerated, in so far at least as river water in temperate regions is concerned.

There is very strong evidence that pathogenic bacteria *do not* multiply in water, but on the contrary tend to lose their vitality fairly rapidly. Dr. Houston, of the Metropolitan Water Board, has recently made exhaustive investigations in this direction, and his conclusions are that sewage-polluted rivers contain pathogenic bacteria only infrequently and in small numbers, and adds that "epidemics occurring in the case of towns receiving their water supply in this way may be really due, not to any temporary inefficiency or breakdown of the filtration plant, but to the unfiltered water becoming suddenly and accidentally grossly polluted with infective material, or to some accidental contamination of the supply after filtration." These facts are mentioned, however, only to emphasize the fact that, in tropical and sub-tropical countries at all events, river water should never be drunk, under any consideration, until it is thoroughly filtered and boiled, and, after treatment in this way, is kept free from any risk of contamination. The wise householder will see this process carried out himself; also see that the filter is kept thoroughly clean, else it may prove a permanent source of danger.

Water passes very rapidly through the stomach into the intestines, much more rapidly than milk, and for this reason it is a more dangerous vehicle of infection, inasmuch as the natural hydrochloric acid of the stomach is unable to act on the germs of disease.

The question is often asked, can filters be depended on to render water free from all danger? and the answer must decidedly be in the negative, indeed they may prove positively dangerous, unless a rigid rule of absolute cleanliness is strictly observed.

Asbestos, charcoal, and filters of a similar nature, are now of interest only as curiosities, as they are generally quite inefficient.

The two forms which would appear to command the greatest confidence are the Pasteur Chamberland and the Berkefeld, but the use of the former must be greatly restricted in the Tropics at least, owing to the usual muddy condition of the water, which completely blocks the filter unless it is very frequently cleansed, an operation necessarily very liable to be neglected. The Berkefeld, in my opinion, is unquestionably the best filter to use for domestic purposes. The rate of filtration is very great, so great that ordinary persons who are unacquainted with its simple mechanism find it difficult to understand how water can for that reason be efficiently freed from bacteria and organic impurities. One other great advantage of the Berkefeld is that it requires very little attention, and in the hands of the ordinary householder, who himself or herself attends to the process of cleansing once a week, it can be safely asserted that it is a reliable protection against disease.

To render water, however, absolutely safe it must also be boiled; but most people object to boiled water as insipid and unpleasant. The quality may, however, be improved by shaking up the water in a stoppered bottle, or by the addition of a few drops of hydrochloric acid, a few slices of lemon or toast. The latter is a very simple and effective means of removing the flatness caused by boiling.

A very pleasant drink and one which at the same time possesses tonic properties, as well as a stimulant to the liver, is decoction of lemons. It is best made by boiling for half-an-hour a sliced lemon, including skin and seeds, in a pint and a half of water, straining, diluting and sweetening as desired. The addition of sugar acts as a tonic and restorative, and diminishes notably the craving for alcoholic stimulants, which is a natural feeling in enervating and depressing climates. Other useful drinks are fresh lemonade or orangeade, limejuice, weak cold tea and barley water.

The habitual use of mineral water is not to be recommended, unless alone, for one reason or another, absolute reliance is not to be placed on the effective sterilization of the ordinary available water.

The mineral matter contained in the commercial waters in general use varies very considerably, and in some is far in excess of what can be taken into the system for any considerable length of time, without running great risk of causing serious tissue degeneration, or other complications.

The salts mostly held in solution are chloride of sodium (common salt), soda, potash, lime, and the majority are as well impregnated with carbonic acid. It is frequently stated that this latter gas is "natural," but this statement does not always convey the literal truth by any means.

Now the system derives in sufficient quantities, from an ordinary dietary, the salts necessary for a physiological existence, and it follows that, when a highly mineralized water is taken as well, there is danger not only of injuring the epithelium or lining membrane of the stomach, but of causing a deposition of salts, and under certain circumstances the formation of calcareous deposits.

In addition, when a table water contains more than 1 per cent. of mineral matter the specific effects of the salts become manifest, and as chloride of sodium and lime are especially contra-indicated, where a tendency to certain morbid conditions exists, it follows that great discretion must be exercised in the choice of a drinking water, and that the selection must be left entirely to the physician.

A mineral table water should not contain more than 1 per cent. of mineral matter, if habitually used, and here it may also be stated that a good ordinary drinking water should not contain more than 9 grains of solid matter to the gallon.

It may be useful to give briefly the properties of some well-known waters:—

Apollinaris. Alkaline, highly aerated. Chief constituents, sodium chloride and carbonates of soda and lime.

Rosbach. Mildly alkaline aerated. Contains 82 grains of sodium chloride, and 38 grains of earthy carbonates in a gallon.

St. Galmier. 2·8 grammes solids per litre, chiefly bicarbonates.

Seltzer. 3·6 grammes solids per litre, consisting of 2·34 sodium chloride and 1·3 grammes of carbonates.

Vichy. Alkaline, acidulated; 8 grammes solids per litre, chiefly bicarbonate of sodium.

Claudia. Carbonic acid with small quantities of alkaline bicarbonates.

Giesshubler. Alkaline, acidulated. Sodium, potassium, magnesium and lithium bicarbonates, free carbonic acid.

Nocera Umbra. Alkaline, bicarbonates. Slightly mineralized.

Perrier. Slightly mineralized. Small proportion of alkaline carbonates.

Salutaris. Still and aerated table water distilled water.

Many of these waters contain a large proportion of mineral salts and therefore cannot be recommended for habitual use.

This does not apply to Perrier or Nocera Umbra, both of which can be very safely recommended as table waters.

Perrier has a very agreeable flavour, is stimulating and refreshing owing to the large amount of natural carbonic acid which it contains, and is indicated among other conditions in acidity, pyrosis and when the urinary secretion is defective.

Nocera Umbra is very agreeable to the taste, contains a moderate amount of natural carbonic acid gas, and is very useful in many forms of indigestion, catarrhal condition of the stomach, intestinal stasis and as a urinary stimulant.

Alcohol.

Now we come to alcohol. This drug, poison or food (whichever view is taken of it), has come in for a good deal of abuse at one time or another, and probably it deserves at least a portion of it. However, although alcohol may be harmful, it can also be decidedly beneficial, and our own personal view agrees with Matthew Arnold, who said that "wine used in moderation seems to add to the *agreeableness* of life—for adults at least—and whatever adds to the agreeableness of life adds to its resources and power."

The days of unlimited cocktails, gin or otherwise, early dosing with rum and milk, brandy-pawnee and strong curries may no longer exist, but there is no use in attempting to deny the fact that excessive drinking still prevails in hot countries.

You may not see the type of man so frequently perhaps as was depicted by Thackeray :—

> "A military gent I see,
> And while his face I scan
> I think you'll all agree with me,
> He comes from Hindustan."

But we all know that there still exists a type of man who is "a law unto himself," who eats, drinks, and smokes what he choses and when he choses, who plays bridge until the early hours of the morning, and yet does not appear to be anything the worse for his inordinate indulgences.

As there is no visible or apparent sign or symptom to indicate latent or incipient mischief, he sees no reason why the principles of moderation should be exercised; but when the grand climacteric has arrived, and he begins to go down the hill of life, it will be found that the pace is a gallop, instead of the leisurely descent that Nature intended.

The injurious effects of over-indulgence in alcohol in hot countries cannot be over estimated. Perhaps we can more readily understand this if we briefly consider its most important physiological actions. Before doing this, however, it may be as well to mention some ordinary alcoholic drinks that can with safety be recommended, and also to state that it has been approximately ascertained that from 1 to 1½ oz. of absolute alcohol is about the amount that can be utilized as a food or completely oxidized in the body in twenty-four hours, although Fraser, of Edinburgh, puts the amount at 3 oz., and says that in that quantity it is a natural food.

If we accept the first, that amount of alcohol would be represented by the following quantities of the more frequently used alcoholic drinks. Brandy or whisky (40 to 47 per cent. alcohol) 3 fluid oz. or 1½ glasses; port, sherry, or other strong wines (about 20 per cent. alcohol) 7 oz., or 3½ glasses; claret, hock, champagne, and other weaker wines (5 to 10 per cent. alcohol) 15 oz., or a tumblerful and a half; strong ale (bottled) (10 per cent. alcohol) 20 oz., or one Imperial pint.

It can readily be imagined that any recommendations founded on such limitations would not prove very popular, or, indeed, acceptable.

Many profess to derive great benefit from a good light wine, preferably red, as white wine frequently acts injuriously on the nervous system.

This observation was impressed on me by noticing in certain districts on the Continent, where this wine is drunk in large quantities, that the inhabitants exhibit various nervous manifestations, a condition of affairs which does not exist to anything like the same extent in regions where the red wine is alone produced.

The best wines for ordinary use are perhaps Macon, Beaune, Pommard, Chambertin, Médoc and Light Grave.

For ordinary use some of the light Italian wines will be found to act as admirable tonics. This refers especially to the Tuscan wines such as Chianti, and if a stronger wine is indicated, such as in anæmic conditions, Barola will be found very useful. Should a white wine be preferred Capri is excellent.

All these wines should be taken well diluted with a good mineral water and only procured through a reliable agent, as it is well known that substitutes from Greece and Syria are very much in evidence.

As regards whisky it is not so difficult as it may appear to make a selection, although some of the whisky labelled "Irish" and "Scotch," in this country at least, is without doubt of Greek extraction and manufactured locally. John Jameson's well-known Irish whisky can be relied on as *absolutely pure*, and in connection with this brand it is important to remember that it is only manufactured from selected corn grown in Ireland. The Scotch whiskies that can be recommended are Mackinlay's V.O.B., Sandeman's blends, Tosh, Sandie Macdonald, also Peter Walker's "English" whisky. Nicholson's dry gin is a pure spirit and of medicinal value in warm countries—and the same can be said about Sandeman's well-known port wine.

Now as regards the physiological actions.

Alcohol is, in the first place, a stimulant, acting more on the heart than the nervous system. The effects are, however, only transitory, and are invariably followed by a period of depression.

Owing to the stimulating effects on the heart the force and frequency of the action of the organ are increased. The result is increased activity of the circulation in the brain, which may amount to something approaching a transient congestion. At all events, this increased flow of blood to the brain, and undue cerebral activity, is an indication — and a very strong indication— against the indiscriminate use of alcohol, under such conditions as exist in a tropical climate. It is well known that the parts of the body that require special protection from the effects —the congestive effects—of a tropical sun, are the brain and the upper portion of the spinal cord, and, naturally, the administration of anything that causes an influx of blood to these parts is a proceeding fraught with grave risks. It will then be readily understood that alcohol is strongly contra-indicated under such circumstances, and experience has taught many persons the wisdom of not touching it "until the sun has gone down."

Perhaps the most important physiological effects of alcohol are on the circulation. Not only is there increased cerebral activity, but also, and this is of great practical importance, dilatation (with consequently increased flow of blood) of the peripheral (surface) blood-vessels.

Thackeray said he got his best thoughts "when driving home from dining out with his skin full of wine." Perhaps he did not know that this statement embodied a physiological truth. It does so, however, but one which is only rarely rightly interpreted or understood.

These actions are responsible for the sense of warmth which is usually experienced after taking alcohol, but a feeling of this sort is very misleading and is commonly misinterpreted, inasmuch as, in reality, what takes place is a lowering of the temperature due to the dilatation of the blood-vessels of the skin. There is, of course, under such circumstances a greater volume of blood exposed to external influences, with loss of heat by radiation.

The transitory feeling of warmth which is experienced soon after taking alcohol is responsible for the current idea that it "keeps out the cold." Of course, this is a great mistake, as it does not do so; on the contrary, owing to the physiological action just mentioned, it lets out the heat instead.

It is obvious, then, that it is the worst possible thing to take alcohol when going outside in cold or wet weather. On the other hand, it is equally obvious that, should a chill be contracted (which means internal congestion) in cold or wet weather, or in warm weather after the body has been unduly heated by excessive exercise, a liberal allowance of alcohol, which we have seen drives the blood to the surface, is strongly indicated, and its timely administration may prevent the advent of serious acute illness.

Now we have seen that alcohol undoubtedly lowers the temperature of the body, and for this reason may be looked on as a useful tropical medicine, especially as its action in this direction is possibly increased by the peculiar action which it exercises on certain kinds of food. Fat, as already pointed out, is the principal source of heat and the effect of alcohol on this substance is to prevent its combustion.

It is also known to be a "sparer of the

carbohydrates," which produce a moderate amount of heat. It is conceivable then that, so far at least as temperature or body heat is concerned, the administration of alcohol may add temporarily to the "agreeableness of life."

But this limited view, while in accordance with physiological principles, would, if followed, be productive of harm in other directions, for, as Hutchinson says, "Alcohol, like other poisons, such as arsenic, impairs the fat-destroying powers of the cells, and the diminution of the chemical energy of the cells interferes with the ordinary process of metabolism, and results, of course, in chronic disease."

It must not be forgotten that alcohol is a chemical irritant and that the amount of irritation produced on the nerve-endings, the mucous membrane, and eventually on the structural arrangements of certain organs of the body, is entirely proportionate to the degree of dilution and the quantity taken over and above the amount already specified. In this connection, however, it is well to remember that alcohol is rapidly oxidized in the system as a result of active, open-air life, and that under such circumstances an amount can be consumed without injurious effects, which in the case of those of sedentary habits would lead to disastrous consequences.

It may be concluded, then, that :—

(1) Total abstinence is not to be recommended in the Tropics.

(2) Alcohol in *moderation*, because of its stimulating and restorative qualities, is decidedly beneficial and at times strongly indicated.

(3) It should never be taken until the sun is low, when the restorative effects are more marked after the depressing influences and fatigue of the day.

CHAPTER III.

EXERCISE AND CLOTHING—INJURIOUS EFFECTS OF OVER-INDULGENCE IN EXERCISE AND GAMES—THE BEST COLOURS FOR CLOTHING MATERIAL.

IT will possibly be a surprise to many to see exercise mentioned as a probable factor in the incidence of disease, or as affecting injuriously in any way the health of the individual, but this expression of opinion is made with the full knowledge that it is antagonistic to current notions and practices.

The prevalent feeling, among British at least, is that exercise and health are inseparable, and so they are, if what is generally understood as "exercise" is regulated by reason and moderation. The passion for exercise among some people would appear to be so strong that it amounts to an obsession, but, like spiritual beliefs, which are in a large measure dominated and influenced by climatic conditions, physical education and indulgence must be regulated and practised in proportion to the number of degrees north and south of the Equator. In other words, to indulge in the same amount of exercise, say in the Soudan, India, or Egypt, as in Britain or Germany, is a proceeding bordering on mania. And yet one often hears it said, in a boasting spirit, with reference to ourselves, that no other nation could play polo, football or cricket in India, the Soudan or Burmah.

That is indeed very likely, for it must be admitted that no other nation wastes so much time over games and exercises, or is imbued with such preposterous ideas with reference to the relative value to be attached to them.

It is very difficult for the ordinary individual to understand how it is that occasionally a man is met with who, although comparatively speaking he takes very little exercise, yet continues in the enjoyment of normal health, while others are always "out of sorts" unless their muscles are subject to a certain amount of hard work every day.

Of course, the question resolves itself largely, if not entirely, into the matter of the consumption of meat and alcohol. The man who eats meat sparingly and indulges in alcohol moderately, requires very little exercise, and the less he feels *forced* to take in tropical latitudes, the better for his physical and mental well-being. On the other hand, if a man eats or drinks to excess, the poisonous accumulation of food debris must be got rid of in other ways, else the internal excretory organs would soon rebel against the unnatural and abnormal activity in their functions. Exercise, as it is called, when indulged in for such reasons, is simply getting a hold of the wrong end of the wrong stick.

A very foolish and inaccurate statement is commonly attributed to Wellington, viz., that "the battle of Waterloo was won on the playgrounds of the public schools." It may well be a matter of doubt whether he ever uttered such a saying. I prefer believing that it emanated from a village schoolmaster whose mental horizon did not extend beyond the local football ground.

At all events if the pursuit of games and amusements is to take the place of the older conceptions of study, labour and regularity the "battle of life" will inevitably be lost on the "playgrounds of pleasure and amusement."

A false standard of life has been attributed to the modern conception of games, and if the assumption is correct and human existence is regulated according to false ideals, it is difficult to realize how a perfectly sound mind can be cultivated in a perfectly sound body.

A recent writer, in alluding to what he calls the "tyranny of golf," expresses himself very forcibly and justly when he says: "In the temper of modern England there is nothing more gravely deplorable than the apathetic levity with which her citizens approach serious questions of State. . . . National service is shirked by one class because it would interfere with a pleasant habit of loafing about the public-house; it is shirked by another class because it would interfere with the amiable contest which it is never tired of waging against 'Colonel Bogey.' But there are worse enemies in store for us than 'Bogey,' enemies who cannot be defeated by cleek or niblick. And when the hour of danger strikes, will it not shame us that golf has dulled the edge of patriotism, that our hands are better fitted to carry clubs than rifles?"

There is no subject connected with hygiene with reference to which men are so prone either utterly to neglect or to run into dangerous extremes.

A glance at the history of ancient Greece will furnish irrefragable proofs of the extremes to which nations, as well as individuals, will go in dealing with the subtle influences of man's physical nature. At no other time in the history of the world was the physical and mental education of the individual so assiduously, systematically and scientifically cultivated, and it was only when the symptoms of decay and degeneration became evident and pronounced, that extreme practices, such as gladiatorial displays, were substituted for, and eventually supplanted, the rational and well-regulated teaching and practice of the gymnasium. And to come to recent times. It was only a few years ago we saw another striking example, when a long-despised nation of vegetarians defeated on land and sea one of the most powerful nations of Europe.

Discipline, physical education, sobriety, frugality and rice defeated flabby physical size, lack of discipline, vodka, and beef.

However, it is impossible to pursue this fascinating subject further, and it is scarcely necessary to emphasize the practical lessons furnished by such historical parallels.

The question which now concerns us most is: Is exercise of such vital importance for the maintenance of health in a hot country as is commonly supposed? And the answer must largely be dependent on the form which it assumes and the extent to which it is pursued.

Violent exercises, such as football, polo, tennis, produce much unnecessary fatigue and languor. There is also induced great activity in the functions of the skin, owing to the increased flow in the peripheral circulation. Free and copious perspiration results, a phenomenon which, even under ordinary conditions, as they exist in warm countries, far exceeds physiological limits. Of course the exertion, combined with the excessive perspiration, results in physical inertia, the natural and intrinsic powers of resistance to disease becomes lowered, and unless at such critical times the greatest care is exercised "internal chill" supervenes, and what that means in tropical countries we all understand, and are unfortunately only too familiar with the consequences.

But, it may be urged, injurious effects, when they arise in this way, cannot in fairness be ascribed to games and exercises if practised in the right spirit. Probably not, but how often is it possible, convenient or opportune to change the underclothing and have a warm bath or brisk friction, immediately or soon after the games are finished? Is it not, instead, the practice to sit about, perhaps in a draught, in wet underclothing, to indulge in a very acceptable "cold drink," thereby inducing more perspiration and running other risks as well as the very obvious one of contracting a chill? Or again, how frequently is it necessary to have to drive or "motor" some distance without adopting any necessary or common-sense precaution? Perhaps if we could revert to the time of the so-called ancients much could not be said, if anything, in condemnation of certain physical exercises.

They, instead of sitting about and discussing *ad nauseam* the intricacies of cricket, polo or golf, carried out immediately the natural restoratives comprised in the bath, friction and repose, and these they invariably carried out before partaking of a full meal, as they were well aware of the dangers that may result from eating soon after much bodily exercise.

Although the constant discussion with reference to the increased prevalence of appendicitis becomes wearisome, I cannot resist saying that I have been long convinced that as predominant factors in the etiology of that disease may be mentioned partaking of food too soon after physical exertion, and at the same time the habitual use of cold and highly mineralized waters. From the very earliest times all authorities have condemned eating too soon after much bodily or mental exercise.

Suetonicus considered this to be one of the chief causes why apparently sober and moderate persons astonish their friends by dying (probably from what is now called appendicitis), their death being the result of taking food injudiciously at these times, because the weary body perspires, or exhales with so much difficulty, after excessive exertion. Whatever may be the worth of this explanation, it is usually found that the serious results of mental or bodily exhaustion have some connection with what is taken into the stomach immediately after either.

And here it may be useful to mention that a condition—probably urethritis—is frequently found, especially among newcomers to tropical regions.

The frequency and severity of the affection appear to be in proportion to the activities of the individual, for while those who habitually indulge in violent games and exercises are very prone to the condition, on the other hand amongst those who exercise within the limits of moderation, it is only rarely met with. It is commonly regarded as of little or no importance, and therefore liable to be neglected, but pus in the urine, whether it originates in the urethra, bladder, ureter, or pelvis of the kidney, should always be a matter for careful investigation, and on no account should its importance be ignored, otherwise it may prove to be the forerunner of serious and chronic disease.

The condition has been ascribed to the action of micro-organisms, and it is asserted that when a temporary stoppage or suppression of the normal flow of urine exists, there is a backward current along the mucous surface of the urinary tract by which they are carried.

One would have thought it scarcely necessary to call in aid a bacillary invasion to explain so simple a condition, which in all probability is due to the highly concentrated state of the urine.

The matter is of importance, also, as showing how readily morbid processes may be set up in any organ when the natural functions are interfered with. The kidneys, owing to the excessive action of the skin, have little or no work to do, and what there is to be done is only performed under abnormal conditions. The urine under such circumstances is highly concentrated, and therefore irritating, and the degree of concentration is usually augmented by the common habit of drinking copiously bad, so-called soda-water, or other drinks highly charged with mineral matter.

As a prophylactic the best and safest diuretic will be found to be boiled and filtered water, or decoction of lemons.

In hot latitudes a climatic combination of circumstances produces weariness and bodily fatigue, and only such exercises should be followed as do not add in a material way to this sense of exhaustion. What are known as the "gentle exercises" are only to be recommended, and these include more particularly walking, riding, and above all, well-regulated gymnastics.

Walking is the most natural form of exercise, and, as such, fulfils every indication, and if good health is to be enjoyed in tropical countries, must be assiduously carried out.

It is very curious, as showing how earnestly and scientifically exercise was cultivated by the Greeks, that, even with walking, they recommended, when a very strong exercise was indicated, that the *heels* should be pressed very heavily upon, thus using the muscles of the lower extremities; and in those days it was recommended for affections of the head or chest, suppressed evacuations, and when any tendency to local congestion of the upper parts of the body existed.

Before leaving the question of exercise, as it is a most important one, it may be useful to emphasize that, if what is generally understood as violent exercise *must* be indulged in, at least languor or physical exhaustion is to be avoided; also every possible precaution should be adopted to prevent chills.

As already pointed out, they have a different significance altogether to physicians practising in the Tropics, to what is generally understood in temperate latitudes, and lead frequently to serious illness, such as fever, internal congestion ending in pneumonia, pleurisy, appendicitis, or enteritis.

And as the dwellers in hot countries are in a more or less debilitated condition, the mortality from such affections is uncommonly high. Not infrequently it will be found that such illnesses are contracted by the newcomer and inexperienced, who consider it a sign of effeminacy to adopt common-sense precautions. Exercise is only to be taken when the sun is low, and afterwards, as soon as possible, a warm bath, or brisk friction with an ordinary towel.

A cold bath should never be indulged in, as it tends to cause hyperæmia of the liver, and if any predisposition to liver disease exists may prove a serious matter. The "drinks" are to be of a moderate temperature only; iced drinks are bad at any time, and particularly harmful to the stomach, but they are positively dangerous when the body is excessively heated after exercise.

Ice used in this way is the frigidest absurdity invented by man, and besides, it must not be forgotten that it is frequently manufactured from polluted water, or gets contaminated on the way to the consumers.

The general conclusions, then, which one is forced to arrive at are:—

(1) That anything in the nature of violent or excessive exercise in tropical latitudes should strongly be discouraged.

(2) That much ill-health and disease are undoubtedly caused by neglect of ordinary

precautions after games and exercises are pursued to any considerable extent.

Clothing.

With reference to the question of clothing, it appears to be generally accepted that no improvement can be effected in those now in general use.

White, grey or khaki are the favoured colours for the outer clothing, and the materials of which they are composed should be as thin as possible. The underclothing is also to be of light material, and either wool or silk; cotton under no consideration is to be used.

It is also accepted as an article of faith that a belt of some description—they are generally known as "cholera belts"—should be worn day and night. And also the spine, particularly the upper portion, should be protected by a special contrivance, while the helmet is to be large, airy, and light, and protrude sufficiently in the posterior part to afford ample protection to the cervical region.

These would about fulfil the orthodox ideas, and I suppose it would amount almost to heresy to take exception to any of them, or suggest any improvements.

White is, of course, an ideal colour in many ways, as it does not absorb the sun's rays, but in view of our present knowledge of the rays of the solar spectrum, combined with other natural phenomena, it is evident that white is not altogether the best colour, inasmuch as it does not fulfil every indication.

The injurious effect of the sun is now believed by many to be due to the short chemical rays, rather than to the heat rays. These rays are easily and readily transmitted by white material, but such colours as red, yellow, or orange do not allow the chemical rays to pass through them.

It is evident, then, that a radical change in the colour of the clothing hitherto favoured by Europeans in tropical countries should be effected in view of such important facts, and indeed Sambon, after an exhaustive inquiry into the subject, advocates on rational grounds a complete change in the colour of the dress materials.

The actinic theory of sun traumatism has long been recognized, but only quite recently has received the attention which it undoubtedly deserves. As Manson points out, the natives invariably in hot countries have dark skins, similarly the European after residence for a certain time becomes more or less tanned. In both instances, the deposit of pigment is Nature's method of protection against the actinic rays of the solar spectrum. If, then, we wish to profit by this hint of nature, clothes with non-actinic colours should unquestionably be used, and experience has amply confirmed the utility and advantage of such an arrangement. Red or yellow are the best colours, and a fabric is now made into which both these enter and can be worn as underclothing, at all events, should sentiment or prejudice preclude the possibility of more general use.

In this connection may be mentioned a material called "Gabardine," made by Burberrys, of the Haymarket. It is of silk-like texture, light in weight, of extraordinary strength and impenetrability by either atmospheric precipitants or solar rays. Its suitability to the varying conditions obtaining in different latitudes and its adaptability to the exigencies of Oriental sport and daily life make "Gabardine" appropriate and healthful for either male or female wear.

With regard to headgear, Manson also suggests that the helmet should be similarly guarded and, remembering the phenomena connected with the X-rays, mentions the possibility of solar rays, other than the heat and actinic rays, which can be arrested by metals, and with this object in view he recommends a thin plate of some light material, such as a sheet of tinfoil between the layers of pith, constituting the basis of the ordinary solar topee.

Such hats are now manufactured and the weight is not appreciably increased.

There are many kinds of abdominal belts in general use, some of them quite formidable-looking arrangements. They had much better be discarded. Such contrivances act something like a poultice, they produce intestinal stasis and congestion, with looseness of the bowels and eventually weakening of the abdominal walls. It is wise and prudent to wear a belt during the night, as it undoubtedly prevents the possibility of chills, but it should be very simple. An ordinary knitted flannel arrangement fulfils every indication. The same objections can be urged against the heavy spinal protectors in ordinary use. All that is required is a pad of cotton wool, enclosed in a red or yellow covering, and sewn into the coat. This simple contrivance will be found both agreeable and efficacious.

CHAPTER IV.

THE PREVENTION OF DISEASE—THE RELATIVE MERITS OF PROPHYLACTIC MEASURES—FLIES AND ANTS AS PROPAGATORS OF DISEASE—CARRIERS—LIVING AND DEAD.

THIS is not the place to enter into any elaborate discussion on the prophylactic value of certain serums and vaccines. Statistics are to be sure available, which appear to demonstrate, in such a disease as enteric at least, that a system of inoculations by such agencies, when systematically and properly carried out, has a marked effect on the incidence of the disease, as well as, when it is contracted, on the fatality.

It will be obvious that undue significance is liable to be attached to such statistics, and even when most carefully compiled they cannot always be guarded against error, but after making due allowance for all this, the results obtained at the hands of some experimenters appear to be decidedly encouraging. In the present state of our knowledge, however, it is impossible to dogmatize on the therapeutic value of such measures, nor should we at the same time before formulating any definite conclusions, ignore entirely any possible ulterior results that may supervene after injection of some millions of dead micro-organisms, or their products, into the tissues of a healthy individual.

Such may be an attempt to follow Nature's system of immunization, but what Nature has taken centuries to accomplish by the extremely slow adaptation of certain organisms to the environment, artificial immunization attempts to accomplish abruptly by profoundly modifying the vital fluids of the body. To assert that the very abruptness of such practices may upset the natural standard of life would be as rash as to deny it.

A great deal is heard nowadays, perhaps too much, about the germs of disease and too little about the *living* storehouses and factories of disease. If, for instance, less was said about spitting and more about the hygiene of the home, the incidence of tuberculosis would probably be greatly diminished ; similarly if a little less confidence was placed on the prophylactic virtues of *dead* bacilli and more attention devoted to the *living* carriers, so numerous and varied, it is possible that the incidence of typhoid fever, as well as other maladies, would appreciably diminish.

This important fact is now becoming more and more recognized, even in temperate regions, where living carriers such as insects, speaking in the very broadest sense, play a very unimportant *rôle* in comparison with what they do in tropical countries.

It is scarcely necessary to refer to the mosquito, as the responsibilities of that insect in the propagation of disease have been widely circulated. We must not, however, lose sight of the fact that there is only serious evidence to fasten on the mosquito responsibility for, or perhaps to be more correct to be one of the principal factors in the production of, two or three diseases, such as malaria, yellow fever and filariasis, which are after all, comparatively speaking, confined to very narrow limits. And not only that but recent investigations tend to show that there is no direct proportion between their number and the intensity of the malaria epidemic, in fact it has been found to be frequently in inverse proportion. Further, microbes and anopheles may exist without malaria developing itself, even when infected patients arrive from other districts, and that, although the parasites of the disease and the anopheles may persist, the disease itself may not only become attenuated, but disappear altogether.

These facts are mentioned merely to emphasize the fact that while a great amount of time and labour and money has been devoted to the destruction of the mosquito, no organized effort is made anywhere, except perhaps in America, to get rid of flies and ants (not to mention minor culprits such as fleas and bed bugs) which produce infinitely more disease conditions than mosquitoes.

Dr. Daniel D. Jackson, of New York, has quite recently conducted some very interesting and elaborate investigations into the conditions affecting the death-rate in that city, and he found that flies exercised a very baneful influence in the propagation of disease; that, in fact, the prevalence of various internal maladies, particularly typhoid fever and the summer ailments of children, *is in proportion to the number and activity of flies in the district.*

It was also found on examination of some of the captured flies that they carried on their legs and bodies innumerable poisonous bacilli, one fly having more than 125,000. I think anyone with experience of the conditions existing in tropical countries, and who cares to study the habits of these filthy creatures, will agree with the remarkable statement made by Dr. Jackson, viz., that a thorough reform of the sanitary system of the district affected, including the disposal of sewage, would reduce the annual death-rate from typhoid very considerably, and the deaths from other similar illness from 7,000 to 2,000 if germ-infected flies were prevented from contaminating milk and food before or after it reached the city, and that the number of cases of illness from those causes would be reduced by 50,000 annually.

Graham-Smith and Nicoll have also recently conducted some remarkable experiments with a view of showing the actual relations of flies to bacteria, as well as their relation to parasitic worms.

At first sight it would appear to be superfluous to conduct any investigations for the purpose of establishing the potent fact that fluids, &c., can be infected by flies, but during those investigations some very important facts were clearly demonstrated which show that the infective periods of flies vary widely, and also that the potentiality of infection depends largely on the conditions under which the experiments were carried out.

In the case of the house-fly it was clearly proved that they may continue infective for at least eleven days, and that with non-sporing organisms such as the typhoid bacillus, the infection is conveyed in the alimentary canal, and with spore organisms such as the anthrax bacillus the exterior of the body such as the legs and wings remain infective for a similar period.

In the case of the blow-fly infection could be conveyed from the legs and wings, by both kinds of organisms, as late as the thirteenth day after contamination, although this result, so far as non-sporing organisms is concerned, depends entirely on whether the flies were fed on thick syrup or milk. When fed on syrup it necessitates constant cleansing of the legs and wings, and although this may appear to be a useful sanitary measure, in reality it is not so, for it means constant re-infection from the alimentary canal through the proboscis. When milk was used infection disappeared at a much earlier period.

Some further experiments demonstrated the remarkable fact that blow-flies can infect milk or syrup for as long as twenty-six to thirty-one days after they had been fed with certain pathogenic organisms.

The question of the transmission of bacteria from the larvæ to the adult fly has also been investigated, a matter of importance considering how liable they are, through various circumstances, to become infective. Although various organisms have been experimented with, with the exception of one, the anthrax bacillus, the results have been entirely negative, a fact which would give support to the view that non-sporing germs, such as typhoid bacillus, are killed through various causes during the stages of development. Nicoll's report deals with the transmission of the eggs of parasitic worms through the agency of house-flies, and he sums up the general facts which are known in regard to the life-history and mode of transmission of parasitic worms and the characters of their eggs.

The size of the latter appears to be the most important factor in their relation to flies, for the ordinary house-fly is unable to swallow particles exceeding 50 μ in diameter. This fixes a limit to the size of egg which can be ingested, and, as many parasites produce eggs exceeding this size in one or both diameters, they must be much less likely to be disseminated by flies. The experiments were conducted chiefly with the tapeworms *Hymenolepis diminuta* and *Tænia serrata*. The former produces eggs exceeding the limit; the latter much under. It was found that the eggs of *T. serrata* could be ingested in hundreds, that they might remain in the intestine of the fly for two or three days without being destroyed, and that, when deposited, they retained their infectivity. It was further noted that fæces containing tapeworm segments afforded flies the opportunity for contaminating food for at least a fortnight after exposure. With regard to the conveyance of eggs on the external surface of flies, although this was demonstrated several times, even in the case of such large eggs as those of *H. diminuta*, Nicoll is evidently not inclined to attach such far-reaching importance to this mode of transmission as to that by the intestine, and in this respect he is in agreement with Graham-Smith in the case of bacteria. It is obvious, however, that where foodstuffs and infective excremental matter are separated by no great distance, external conveyance is the most ready means of transmission.

Quite recently I had occasion to attend a Berberine woman in a native hut. She was suffering from nephritis with uræmic poisoning.

There were very foul discharging ulcers in the calves of the legs, and, as well as other manifestations, purulent ophthalmia. There were twenty-seven flies quietly feeding and evidently enjoying the pabulum from the eyes, and no less than 115 on the ulcers in the legs, while several others were lying around taking in nourishment from a mat saturated with purulent discharge. On being disturbed the flies alighted on the exposed parts of my body, as well as, of course, on the crowd of natives around; on the little food visible, on the few plates and dishes constituting the meagre furniture, while eighteen rested for some time on the only cup to be seen, and seven ended by committing suicide by drowning in the goat's milk which it contained. In addition, the only son suffered from bilharzia: while a rat took possession of a large tin dish from which the family eat their food, and acted altogether as if the whole place belonged to him. Admitting that flies are vectors of disease, and that bacilli grow and multiply in their interior, and that certain forms of organisms are carried on the legs and wings and remain infective for many days, it does not require much stretch of imagination to realize the number and variety of serious and lethal diseases that must emanate from such a focus of infection. And yet in face of such convincing evidence nothing is done to mitigate a great evil, either by organized destruction of the culprits, or even the adoption of ordinary precautions to prevent flies from gaining access to the household.

The adoption of such precautions, as well as the protection of latrines and cesspools, which would not prove difficult or expensive, should be legally enforced in tropical and sub-tropical countries, and if this could be accomplished it would prove a sanitary measure of the first importance.

The number of diseases caused by flies is very great, and there is every justification for including the following among them :—

Anthrax, various eye affections, particularly ophthalmia; many forms of skin diseases, typhoid fever, cholera, dysentery, diarrhœa, tuberculosis, staphylococcic infections, certain diseases due to animal parasites, yaws, and more particularly, serious septic troubles.

Ants also play a very important *rôle* in the propagation of disease, in some instances, even more important than flies, although in the present state of our knowledge, but little can be definitely asserted. I have, however, satisfied myself by some recent preliminary investigations that ants are largely responsible for the wide prevalence of diseases due to animal parasites in this country, and that in bilharzia they act at least as one of the principal modes of infection.

Ants, unlike flies, who are known to roam to a distance of 1,700 yards, are essentially domesticated pests, and their activities are confined to the household or the immediate neighbourhood. They live largely on excremental matter, and as these contain parasites and ova of parasites very frequently in large numbers, it can easily be understood how readily they may be transmitted and deposited on food of all descriptions.

The urinary secretion we know is especially infective in the case of persons afflicted with bilharzia. Remembering this fact in conjunction with a knowledge of the habits of natives and ants, it does not require any experimental proof to clearly demonstrate the probability of widespread infection occurring in this way, and that it does do so no reasonable doubt can be entertained.

Ants are more filthy in their habits than flies, true scavengers evidently according to choice, and therefore reliable carriers of infective material to food and drinks. They differ from flies in one other very important respect, in that there does not appear to be a limit, within reason, to the size or weight of the material which they are able to carry individually or collectively, and they certainly can with ease transport the eggs of any known parasite to a considerable distance, not only on the level, but up a tree or a wall.

It can thus be readily seen how ovum of parasites, as well as parasites themselves, are transmitted, as well as septic products of any description.

Besides the highly probable part played by ants in the propagation of parasitic (animal) disease, all of the diseases already enumerated as caused by flies, may with equal justice be ascribed to ants also.

In addition to the importance attached to insects as "carriers" of disease, a great deal of attention has lately been given to the question of typhoid carriers, *i.e.*, persons who at some previous time have suffered from that disease, but still harbour the specific germ and are capable of infecting by their excreta, or otherwise, persons with whom they come into contact.

Many epidemics of obscure origin can now be ascribed to the agency of such infected persons, and as there is no limit to the time in which they may cease to be infective, inasmuch as well authenticated cases are on record when they have remained so for periods varying between twenty and thirty years from the time the disease was first contracted, the necessity for systematic and bacteriological supervision becomes apparent, although it must be confessed that this method is not always absolutely reliable. In connection with this very important subject a remarkable paper was recently read by Professor Lentz, of Berlin, in which he described the results of a typhoid campaign conducted in South Germany.

From this it appears that stations were situated at certain points in the "campaign country," and that the duties of those appointed to each station were to be :—

(1) To assist the practitioners in the diagnosis of typhoid.

(2) To ascertain the source of infection, to render it innocuous, and seek out infected persons at a distance.

(3) To be on the look out for unhygienic conditions.

(4) To determine, by repeated examinations, when convalescents cease to eliminate typhoid bacilli, in order to prevent them from transmitting the disease. The statistics given by Professor Lentz are certainly very remarkable. In 1904 the typhoid mortality amounted to 3,487 and from that year it progressively decreased until 1909 when there were 1,226 cases, or one third of that of 1904. Among each 10,000 inhabitants in the entire campaign district, 10·9 in 1904, and only 3·9 in 1909, contracted typhoid. There was a regular progressive decrease each year. Again in 1904 18·4 per cent. of all places (villages and

towns) were attacked; in 1909 only 9·8 per cent.

Professor Lentz concludes that "these data speak an eloquent language; they show unequivocally that the systematic campaign planned by Koch in the face of many difficulties—such as the bacilli carriers who were first recognized during the campaign—has succeeded in reducing typhoid very materially. These evident results bring with them the hope that at no far distant time the civilized world may be freed from this scourge of mankind."

The standing orders employed in the Pfalz Station have been in force since 1904, and are as follows:—

(1) Typhoid carriers and clinically cured cases are retained under bacteriological supervision until a bacteriological cure results.

(2) So long as they discharge bacilli, the official disinfectors carry out or supervize the continual disinfection of privies used by them with milk of lime.

(3) In the case of school children, workers in factories, and such like, teachers, officials

in State and private bureaus, these may carry on their respective duties, provided that the schools, factories, etc., are provided with suitable wash basins and soap. On commencing duty and on every occasion when the privy or urinal is visited, the hands must be cleansed.

(4) Typhoid carriers are to be restrained from the preparation and sale of food stuffs.

It is scarcely necessary to mention the part played in the propagation of disease by the soil, air, sewer gas, defective drains, foul smells, as well as (already pointed out) water and certain kinds of food, but they are after all but *dead* or *passive* transmitters of disease. Indeed, fairly conclusive evidence was recently brought forward by Houston to show that the tendency in soil, water and air, was towards the destruction of pathogenic bacteria, and if this can be satisfactorily verified, it is easy to understand the profound changes that must be effected in our conception of the whole range of sanitary science. A vast amount of money is now uselessly spent, part of which at least if directed into other channels would be productive of results which would be beneficial in the highest degree to the health of the community. That microbes in water tend to become, under ordinary conditions, less virulent appears to be almost certain, and oysters have been proved, as already pointed out, to be potentially dangerous when the water in which they were grown was found practically innocuous.

In a similar way the soil would appear to gradually lose its virulent properties, while certain kinds of fruit and vegetables absorb and assimilate pathogenic micro-organisms and become recognized sources of danger.

If, then, such agencies as air, water, soil, foul smells, &c., play merely a *passive* part in the propagation of disease, where are the *active* storehouses and factories of infection to be found?

Unquestionably as Houston says in *living* creatures who are suffering, or who have suffered, from infectious disease, or which although not themselves sufferers, yet store in their bodies germs which are infective to others.

It may then be concluded that the principal sources of infection rest mainly with infected human beings, flies and insects (using these, terms in the very broadest sense) and certain kinds of fish when reared under suspicious circumstances. Among these also are to be included, inasmuch as they are endowed with *live* properties, certain kinds of fruit and vegetables, when cultivated in polluted soil.

If any real progress is to be made in the prevention of disease it must be systematically and efficiently carried out on these "*living lines*," and although a well organized plan of campaign based on these views may be difficult or impossible in tropical countries, nevertheless when we remember what has been effected in the case of some diseases, such as, notably, malaria and yellow fever in the Isthmus of Panama, and ankylostomiasis in Porto Rico, we should not allow ourselves to be influenced by what may appear to be a Utopian conception of sanitary policy.

The present appears to be opportune for organized action in many fields of preventive medicine in the Tropics, and under the guidance of well conceived and rightly directed measures in all human probability in the near future, a different significance would be attached to what is now generally regarded as improbable or even impossible.

Medical Equipments for the Tropics.

The intending voyager to the Tropics should on no account neglect to provide himself with a medical equipment for his own personal use and for that of his household. At a distance from towns the opportunities for obtaining either medical advice or medical supplies may not always synchronize with one's urgent needs, and it is, therefore, imperative to study beforehand the remedies which may safely be applied for malarial and other tropical diseases, and for cases of accident and ill-health.

The outfit selected should be simple and compact, and capable of resisting hard wear. The "Tabloid" Medicine Chests issued by Burroughs Wellcome and Co. are in every way suitable. Owing to their long connection with the equipment of expeditions into Africa and other tropical countries, this firm has obtained great experience in the selection of suitable remedies, and are at all times willing to place at the disposal of travellers and explorers the information so acquired One of the handiest cases for general use in the Tropics is based on the suggestions of Sir William Moore. It is known as "Tabloid" Medicine Chest, No. 231, and contains minor surgical instruments, dressings, and a goodly supply of "Tabloid" products of quinine, Dover powder, magnesium citrate (effervescent), ammonium carbonate, podophyllin compound, potassium bromide, iron sulphate, chloral hydrate, ammonium chloride, potassium nitrate, ginger essence, soda-mint, ipecacuanha, paregoric, "Saxin," and potassium permanganate.

A bottle of chlorodyne, a lancet, bistoury, needles, tourniquet, and surgical dressings and requisites are included.

The Settler's "Tabloid" Medicine Chest, No. 258, is also very suitable for the planter, or resident in out-of-the-way districts, a special feature being the good supply of dressings which it contains. This is rendered possible by the excellent method of compression adopted for all the "Tabloid" lints, wools and bandages. Thus, a 2-oz. packet of boric wool occupies an astonishingly small space, and is preserved in its germ-proof cover quite aseptic up to the moment of use.

For lengthy expeditions or for out-stations at a considerable distance from sources of supply, the Congo "Tabloid" Medicine Chest, No. 250, is preferred. This case was carried by Stanley on his famous explorations through the interior of Africa. It measures 15¾ in. by 10½ in. by 8¼ in., weighs about 40 lb. when full, is very strongly made of japanned sheet steel, and contains six 5-oz. and thirty 3½-oz. glass-stoppered bottles of "Tabloid" and "Soloid" products. The lid opens out in two sections containing dressings, bandages, minor surgical instruments and other accessories.

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